



# Engineering Program

Specialization	Common
Course Number	20303116
Course Title	Engineering Software
Credit Hours	1
Theoretical Hours	0
Practical Hours	3





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### **Brief Course Description:**

❖ The main purpose of this course is to introduce the student to the following topics:

Manual electrical Engineering drawing, electrical block and wiring diagrams. symbols of basic elements of electrical and electronic circuits devices and machines. Block diagrams of Electrical and Electronic Systems. Schemes' Reading. Electrical Drawing using computer techniques .

### **Course Objectives:**

1. To improve technical and professional information of students.
2. To improve the students abilities
3. To read & analyze of machines & apparatus catalogues.
4. To improve the students skills in using the computer for electrical drawings .
- 5.To draw airfield lighting loop circuits and wiring diagram.



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❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

## Detailed Course description :

Unit number	Unite name	Unite content
1.	Electrical and electronic diagrams & their reading	<ul style="list-style-type: none"> <li>▪ Types of diagrams</li> <li>▪ Reading of electrical and electronic diagrams</li> </ul>
2.	Symbols of circuits, elements and components	<ul style="list-style-type: none"> <li>▪ Symbols of electrical and electronic circuits elements</li> <li>▪ Symbols of measuring instruments.</li> <li>▪ Symbols of wiring diagrams components.</li> <li>▪ Symbols of power system components.</li> <li>▪ Symbols of control and protection devices</li> </ul>
3.	Wiring diagrams of lighting circuits	<ul style="list-style-type: none"> <li>▪ Draw one line and connection diagrams of three lamps controlled from three locations</li> <li>▪ Draw one line and connection diagrams of 2 flourescent lamps controlled by double switch.</li> <li>▪ Draw one line and connection diagrams of interphone system.</li> <li>▪ Draw one line diagram of domestic wiring system.</li> </ul>
4.	Electric and electronic measurement devices	<ul style="list-style-type: none"> <li>▪ Draw ac ,dc circuit with ammeter, voltmeter, wattmeter, power-factor meter, Draw three-phase circuit with power and energy meter.</li> <li>▪ Draw an electronic circuit with electronic voltmeter and oscilloscope</li> </ul>
5.	Electronic circuits	<ul style="list-style-type: none"> <li>▪ Block diagrams and schematic diagrams of DC power supply</li> <li>▪ Schematic diagrams of two stages amplifier.</li> <li>▪ Schematic diagram regulation, apply operational amplifier.</li> <li>▪ Schematic diagrams of logic gates, and connection diagrams of IC.</li> </ul>

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Unit number	Unite name	Unite content	Time Needed
6.	Electrical machines circuits	<ul style="list-style-type: none"> <li>▪ Draw stator winding of dc machines</li> <li>▪ Draw dc generator of external excitation.</li> <li>▪ Draw stator winding of AC single-phase motor</li> <li>▪ Draw connection diagram of 2 generators with measuring and synchronization devices</li> </ul>	
7.	Protection and control circuits	<ul style="list-style-type: none"> <li>▪ Draw diagrams of over-current protection systems</li> <li>▪ Draw diagram of three-phase motor control.</li> <li>▪ Draw a diagram of motor thermal protection.</li> <li>▪ Draw a schematic diagram of differential protection system</li> </ul>	
8.	Electrical control circuits	<ul style="list-style-type: none"> <li>▪ Draw lighting circuit, one lamp lights controlled by one , two and three switches.</li> </ul>	

**Evaluation Strategies:**

Exams		Percentage	Date
Exams	Assignments	30%	--/--/----
	Mid-term Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects			
Discussions and lecture Presentations			

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**Teaching Methodology:**

- ❖ Laboratory

**Text Books & References:**

1. Traister, Robert J. , beginners, Guide to reading schematics, USA, TAB books inc. 1983
2. Robert M. Brawn and Lawrence , Hot to read electronic circuit diagrams, USA TAB book, Inc. 1970
3. Charles J., Baer , Electrical and electronic drawing , 3rd edition, McGraw-Hill , New York 1973.
4. Electrical and Electronic Drawing ,Charles J. Baer 5th edition 1986.
5. Electrical & Electronics Graphic and Letter Symbols and Reference Designations/1996 (Paperback)  
by Institute of Electrical and Electronics Engineers (Author).

